Draft Supplemental Remedial Investigation & Feasibility Study

Volume 2: FS Report

Whatcom Waterway Site
Bellingham, Washington

Prepared by:

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RETEC Project Number: PORTB-18876

Prepared for:

The Port of Bellingham
1801 Roeder Avenue
Bellingham, Washington 98225

Public Review Draft

October 10, 2006

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1 Feasibility Study Introduction

This document is Volume 2 of the *Draft Supplemental Remedial Investigation and Feasibility Study* (RI/FS) for the Whatcom Waterway Site. Together with the companion *Draft Supplemental Environmental Impact Statement* (EIS), the RI/FS document describes the investigation of the Whatcom Waterway site, describes and evaluates a range of potential remedial alternatives, and identifies the preferred approaches for conducting site cleanup.

The preceding *Remedial Investigation Report* (Volume 1) describes the nature and extent of contamination, describes the environmental setting at the site, and concludes with a conceptual model of the site. This document (Volume 2) contains the evaluation of cleanup technologies and alternatives that can be used to conduct cleanup of the site. This document was prepared consistent with the requirements of the Model Toxics Control Act (MTCA) regulations and the Sediment Management Standards (SMS).

This document concludes with the identification of preferred alternatives that best meet regulatory requirements and that provide the best overall cleanup approaches for the Whatcom Waterway site. After considering public comment, the RI/FS will be finalized, and the Department of Ecology (Ecology) will preliminarily select a cleanup alternative for the site. The preliminarily selected cleanup alternative will be articulated for public review in a draft Cleanup Action Plan (CAP). Following public review of the CAP, the cleanup will move forward into design, permitting, construction and long-term monitoring.

1.1 Site Description and Background

The Whatcom Waterway site is located within Bellingham Bay. The locations and characteristics of the site are shown in Figure 1-1. Property ownership is summarized in Figure 1-2.

The site includes aquatic lands that have been impacted by contaminants historically released from industrial waterfront activities, including mercury discharges from the former Georgia Pacific (GP) chlor-alkali plant. The chlor-alkali plant was constructed by GP in 1965 to produce chlorine and sodium hydroxide for use in bleaching and pulping wood fiber. The chlor-alkali plant discharged mercury-containing wastewater into the Whatcom Waterway during the late 1960s and 1970s. Initial environmental investigations of the site identified mercury in sediment at concentrations that exceed applicable standards, as well other contaminants from industrial releases.

The main state law that governs the cleanup of contaminated sites is the Model Toxics Control Act (MTCA). When contaminated sediments are involved, the cleanup levels and other procedures are also regulated by the Sediment Management Standards (SMS). MTCA regulations specify criteria

for the evaluation and conduct of a cleanup action. SMS regulations dictate the standards for cleanup. Under both laws, a cleanup must protect human health and the environment, meet environmental standards in other laws that apply, and provide for monitoring to confirm compliance with site cleanup levels.

The key MTCA decision-making document for site cleanup actions is the remedial investigation and feasibility study (RI/FS). In the RI/FS, different potential alternatives for conducting a site cleanup action are defined. The alternatives are then evaluated against MTCA remedy selection criteria, and one or more preferred alternatives are selected. After reviewing the RI/FS study, and after consideration of public comment, Ecology then selects a cleanup method and documents that selection in a document known as the Cleanup Action Plan. Following public review of the CAP, the cleanup will move forward into design, permitting, construction and long-term monitoring.

The RI/FS process for the Whatcom Waterway site was initiated under Ecology oversight in 1996 consistent with Agreed Order DE 95TC-N399. The RI/FS study process initially included detailed sampling and analysis in 1996 and 1998. These sampling events formed the basis for development of an RI/FS report in 2000.

In parallel with the 2000 RI/FS activities, the Bellingham Bay Comprehensive Strategy Environmental Impact Statement (EIS) was prepared. The EIS was both a project-specific EIS, evaluating a range of cleanup alternatives for the Whatcom Waterway site, and a programmatic EIS, evaluating the Bellingham Bay Comprehensive Strategy. The Comprehensive Strategy was developed by an interagency consortium known as the Bellingham Bay Demonstration Pilot (Pilot). The Pilot brought together a partnership of agencies, tribes, local government, and businesses known collectively as the Pilot Work Group, to develop a cooperative approach to expedite source control, sediment cleanup and associated habitat restoration in Bellingham Bay. As part of the approach, the Pilot Work Group developed a Comprehensive Strategy that considered contaminated sediments, sources of pollution, habitat restoration and in-water and shoreline land use from a Bay-wide perspective. The strategy integrated this information to identify priority issues requiring action in the near-term and to provide long-term guidance to decision-makers. The Comprehensive Strategy was finalized as a Final Environmental Impact Statement in October 2000 prepared under the State Environmental Policy Act (SEPA). It was a companion document to the 2000 RI/FS for the Whatcom Waterway site.

Since 2000, the Bellingham Waterfront has undergone a series of dramatic land use changes, including the closure of the GP pulp mill and chemical plant, the sale of 137 acres of GP-owned waterfront property to the Port of Bellingham (Port), additional property ownership changes in the Central Waterfront Area, and City of Bellingham/Port land use planning initiatives

that shift waterfront uses from industrial to mixed-use development and zoning.

This RI/FS incorporates the results of environmental investigations conducted since completion of the original RI/FS in 2000, updates previously evaluated cleanup alternatives, and describes and evaluates new cleanup alternatives that reflect changes in land use. The EIS companion document to this RI/FS is also currently available for public review. This RI/FS, the companion EIS and public comment on both documents will inform Ecology's preliminary selection of a cleanup alternative for the Whatcom Waterway site. The preliminary selected alternative will be articulated for public review in a draft Cleanup Action Plan (CAP). Following public review of the CAP, the cleanup will move forward into design, permitting, construction and long-term monitoring.

1.2 Document Organization

This document is intended to be read in conjunction with the site Remedial Investigation report (Volume 1) and in conjunction with the companion Draft Supplemental EIS document (bound separately). This document contains periodic references to those other two documents.

This Feasibility Study was prepared consistent with the process defined under MTCA and SMS for identification of a preferred cleanup alternative. The organization of this document is as follows:

- **Summary of Key RI Findings:** Section 2 summarizes the key findings of the Remedial Investigation, including the Conceptual Site Model developed as part of the RI.

- **Cleanup Requirements:** Section 3 of the document then summarizes cleanup requirements for the site. These requirements include a definition of site cleanup levels and remedial action objectives that are to be met by the cleanup action. Also defined in Section 3 are the regulations and requirements other than those in MTCA and SMS regulations that are addressed by the cleanup and its implementation. Future permits or approvals that may be required for cleanup implementation are identified in that section.

- **Sediment Site Units:** In Section 4, the site is divided geographically into a series of "Site Units" that have different characteristics and that may warrant different types of cleanup based on these characteristics.

- **Technology Screening:** After definition of site units and cleanup requirements, Section 5 screens available technologies that could potentially be used to conduct site cleanup. The technology screening evaluates which of those technologies are most

appropriate to site conditions, consistent with Ecology and EPA guidance for contaminated sediment sites. Technologies that are retained after this screening process are then carried forward for the development of comprehensive cleanup strategies addressing the site. Because multiple potential strategies are analyzed in the Feasibility Study, these cleanup strategies are described in this document as "cleanup alternatives."

- **Description of Cleanup Alternatives:** This Feasibility Study evaluates eight different cleanup alternatives. Each of these alternatives is described in detail in Section 6 of this report. The elements of the cleanup are described, along with a description of how each alternative achieves compliance with the cleanup requirements specified in Section 3. Each alternative uses a different combination of the cleanup technologies from Section 5.

- **MTCA & SMS Evaluation of Alternatives:** Consistent with MTCA and SMS regulations, each remedial alternative is evaluated against a set of defined criteria. The analysis is complex and addresses many factors required under the regulations as described in Section 7. From the MTCA and SMS regulatory analysis, preferred alternatives are identified, representing the alternative(s) that rank best overall among the evaluated alternatives.

- **Summary of EIS Evaluation:** Section 8 summarizes the findings of the companion EIS analysis.

- **Summary and Conclusions:** A summary and the conclusions of the Feasibility Study are provided in Section 9. References are included in Section 10 and appropriate backup information is attached as appendices.

LEGEND

- PREVIOUSLY DEFINED SITE CLEANUP AREA
- PREVIOUSLY RESTORED AREA (LOG POND INTERIM REMEDIAL ACTION)
- EXISTING DOCK OR WHARF
- PROPERTY LINE
- -18 1997 BATHYMETRY (MLLW)

BELLINGHAM BAY

CURRENT FEDERAL WATERWAY BOUNDARY

I & J WATERWAY SEDIMENT SITE

I & J STREET WATERWAY

OLIVINE UPLAND

AERATED STABILIZATION BASIN (ASB)

CENTRAL WATERFRONT SITE

AREAS OFFSHORE OF ASB

ASB SHOULDER

CURRENT FEDERAL WATERWAY BOUNDARY

1960'S FEDERAL CHANNEL

FORMER CHEVRON

COLONY WHARF

OUTER WHATCOM WATERWAY

INNER WHATCOM WATERWAY

LOG POND

AREAS NEAR BELLINGHAM SHIPPING TERMINAL

BELLINGHAM SHIPPING TERMINAL

PULP & TISSUE MILL SITE

CHLOR-ALKALI PLANT SITE

BARGE DOCK AREA

STARR ROCK

CORNWALL AVE. LANDFILL SITE

R.G. HALEY SITE

BOULEVARD PARK

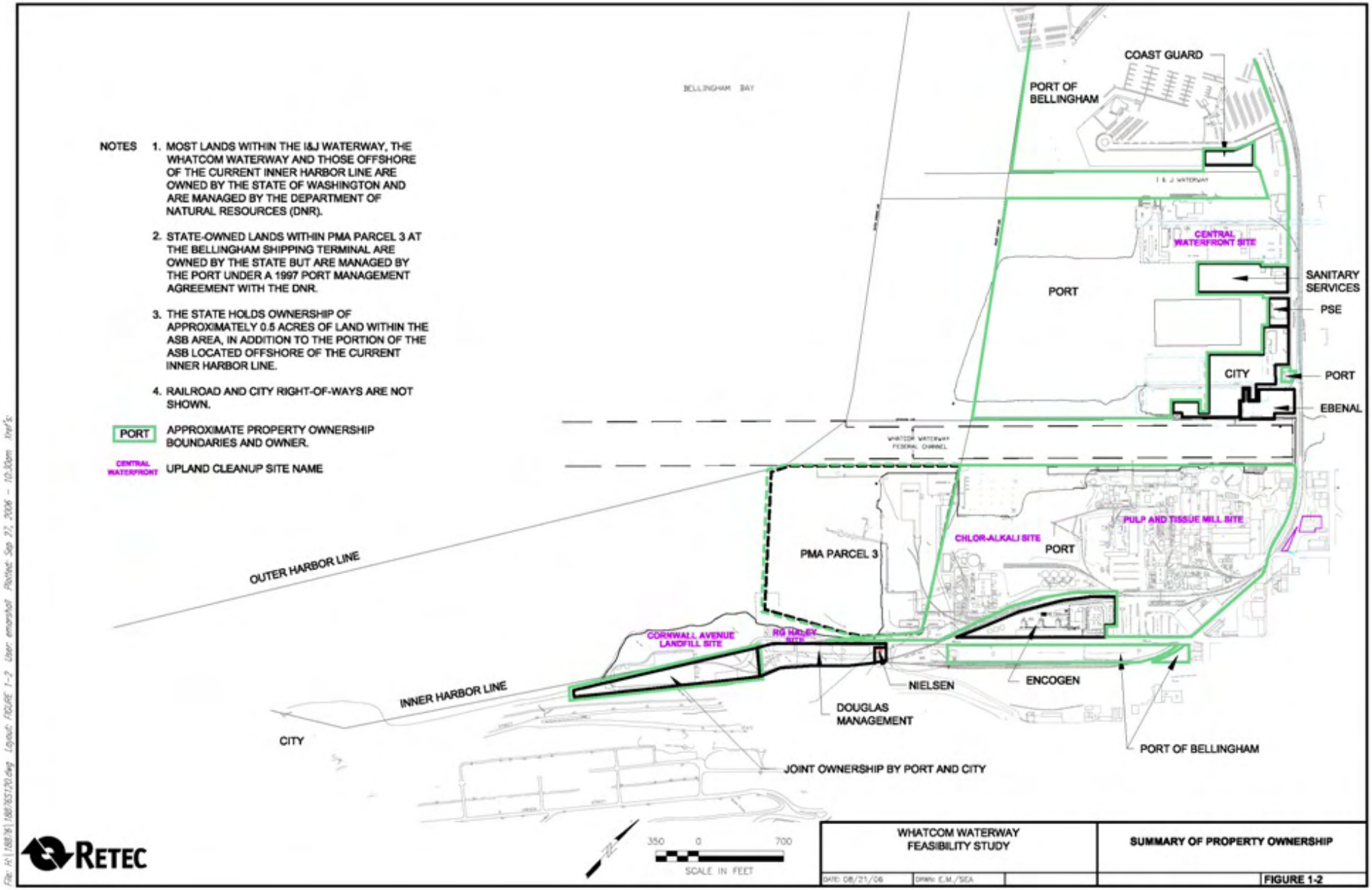
300 0 600

SCALE IN FEET

RETEC

WHATCOM WATERWAY FEASIBILITY STUDY PORTB-18876			SITE LOCATION
DATE: 09/11/06	DRWN: E.M./SEA		FIGURE 1-1

File: H:\188761\188761331.dwg Layout: FIGURE 1-1 User: seacod Plotted: Oct 08, 2006 - 7:33pm Xref's:


NOTES
1. MOST LANDS WITHIN THE I&J WATERWAY, THE WHATCOM WATERWAY AND THOSE OFFSHORE OF THE CURRENT INNER HARBOR LINE ARE OWNED BY THE STATE OF WASHINGTON AND ARE MANAGED BY THE DEPARTMENT OF NATURAL RESOURCES (DNR).
2. STATE-OWNED LANDS WITHIN PMA PARCEL 3 AT THE BELLINGHAM SHIPPING TERMINAL ARE OWNED BY THE STATE BUT ARE MANAGED BY THE PORT UNDER A 1997 PORT MANAGEMENT AGREEMENT WITH THE DNR.
3. THE STATE HOLDS OWNERSHIP OF APPROXIMATELY 0.5 ACRES OF LAND WITHIN THE ASB AREA, IN ADDITION TO THE PORTION OF THE ASB LOCATED OFFSHORE OF THE CURRENT INNER HARBOR LINE.
4. RAILROAD AND CITY RIGHT-OF-WAYS ARE NOT SHOWN.
PORT APPROXIMATE PROPERTY OWNERSHIP BOUNDARIES AND OWNER.
CENTRAL WATERFRONT UPLAND CLEANUP SITE NAME
BELLINGHAM BAY
COAST GUARD
PORT OF BELLINGHAM
I & J WATERWAY
CENTRAL WATERFRONT SITE
SANITARY SERVICES
PORT
PSE
CITY
PORT
EBENAL
WHATCOM WATERWAY FEDERAL CHANNEL
PULP AND TISSUE MILL SITE
CHLOR-ALKALI SITE
PORT
PMA PARCEL 3
OUTER HARBOR LINE
CORNWALL AVENUE LANDFILL SITE
RG HAGLER SITE
INNER HARBOR LINE
NIELSEN
ENCOGEN
DOUGLAS MANAGEMENT
CITY
PORT OF BELLINGHAM
JOINT OWNERSHIP BY PORT AND CITY
N
350 0 700
SCALE IN FEET
RETEC
WHATCOM WATERWAY FEASIBILITY STUDY
SUMMARY OF PROPERTY OWNERSHIP
DATE: 08/21/06
DRWN: E.M./SEA
FIGURE 1-2